S.E. (Chemical) (Sem-III) (Rev.) December-07
Sub: Electronics and Electrical Engg.

5932-08. CD-8962 (20)

(REVISED COURSE)

(3 Hours) **[Total Marks : 100**

1) Question No. **1** is **compulsory**.
2) Attempt any **four** questions from remaining **six** questions.
3) Assume **suitable** data if **necessary**.

empt any **four** :—
(a) What is the torque equation of a d.c. motors ? Explain.
(b) Voltage regulation of an alternator.
(c) Explain why the rotor speed is always less than the synchronous speed of a three phase induction motor.
(d) What is filter circuit ? Which elements are used in the filter circuit ?
(e) Give the logic diagram and Truth Table of NAND and EX-OR gates.

The armature winding of a 200 V ; 4-poles series motor is lap connected. There are 280 slots and each slot has 4 conductors. The current is 45A and the flux per pole is 18 mwb. The field resistance is 0·3 Ω, the armature resistance is 0·5 Ω and iron and friction losses total 800 W. The pully diameter is 0·41 m. Find the pull in Newton at the rim of the pully.
Explain why a synchronous motor does not have starting torque. Explain one method of starting a synchronous motor.

A 50 Hz induction motor has full load slip of 4%. The rotor resistance per phase = 0·01 ohms and standstill reactance per phase = 0·1 ohms. Find the ratio of maximum to full load torque and the speed at which the maximum torque occurs.
Explain the different methods of Electrical Heating.

Each phase of a three phase; delta connected load consists of an impedance = 20 $\lfloor \overline{60°}$ ohms. The line voltage is 440 V at 50 Hz. Compute the power consumed by each phase impedance and the total power. What will be the readings of the two wattmeters connected for measuring power ? What is the resistance and reactance of each phase ?
Draw and explain the block diagram of a CRO. Describe the application of a CRO.

Explain and draw input and output characteristics of Common Emitter Connection of BJT.
An 18·65 kW, 4-pole, 50-Hz, 3-phase induction motor has friciton and windage losses of 2·5 percent of the output. The full load slip is 4%. Compute for full load :—
(i) the rotor cu-loss
(ii) the rotor input
(iii) the shaft torque
(iv) the gross electromagnetic torque.

Explain the firing of an SCR using UJT with proper diagram.
Explain the internal architecture of 8085 microprocessor.

e short notes on :—
(a) V-curves of synchronous motor
(b) Torque-slip characteristics of 3-phase induction motor
(c) Types of d.c. generators
(d) Balanced 3-phase star connected resistive load.
